Customer No.: 31561
Application No.: 10/711,509
Docket No.: 12405-US-PA-0P

REMARKS

Present Status of the Application

This is a full and timely response to the outstanding non-final Office Action mailed on January 20, 2006. The Office Action has rejected claims 8 and 25 under 35 U.S.C. 112, 1st paragraph as failing to comply with the enablement requirement. The Office Action has also rejected claims 1-2, 4, 8, 10, 19-20, 22, 24-25 under 35 U.S.C. 103(a) as being unpatentable over Wuu et al. (USP 6,222,214) in view of Lee et al (USP 6,737,305) and to claims 3, 5-7, 21, 23, 26-27 under 35 U.S.C. 103(a) as being unpatentable over Wuu in view of Lee and further in view of Yang et al. (US Publication 2002/0102781 A1).

Applicants have amended claims 1 and 19, and cancelled claims 8 and 25 to more clearly define the present invention. After entry of the foregoing amendments, claims 1-7, 10, 19-24, 26-27 remain pending in the present application. It is believed that no new matter is added by way of these amendments made to the claims or otherwise to the application. Reconsideration of the claims is respectfully requested.

Discussion of Office Action Rejections

Claims 8, 25 are rejected under 35 U.S.C. 112, 1st paragraph, as failing to comply with the enablement requirement.

The Office contends that claims 8 and 25 specify a limitation for a difference in the deposition rates for the amorphous layer; however, our response submitted on January 4, 2006 directly refutes the limitation by stating that the deposition rate can vary. The

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Office requests Applicants to withdraw the statements of January 4, 2006 or withdraw these claims.

In response thereto, Applicants have cancelled claim 8 and 25. Withdrawal of the rejection is courteously requested.

Applicants respectfully traverse the rejection of claims 1-2, 4, 8, 10, 19-20, 22, 24-25 under 35 U.S.C. 103(a) as being unpatentable over Wuu et al. (USP 6,222,214) in view of Lee et al (USP 6,737,305) because a prima facie case of obviousness has not been established by the Office Action.

Applicants submit that not every element of the claim was taught or suggested by Wuu in view of Lee such that the invention as a whole would have been obvious to one of ordinary skill in the art.

More specifically claims 1 and 19 teach, among other things "*...the step of forming the channel layer further comprises: forming a first lightly doped sub-amorphous silicon layer over the portion of the inter-gate dielectric layer at a first deposition rate; and forming a second lightly doped sub-amorphous silicon layer over the first lightly doped sub-amorphous silicon layer at a second deposition rate...*".

Wuu is directed a method of fabricating a plug structure. Wuu teaches that the channel layer 18' of a P-channel TFT, wherein the channel layer is formed with a relatively thin amorphous silicon layer 18 doped with N-type dopant such as (As) or (P). Wuu, however, teaches the channel layer is formed beside the source/drain region 18 (see Figure 6). Wuu further fails to teach the step of forming the channel layer comprises forming a

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first lightly doped sub-amorphous silicon layer at a first deposition rate and forming a second lightly doped sub-amorphous silicon layer at a second deposition rate.

The Office then relies on Lee to teach the source/drain region being formed over the channel layer. The Office further asserts that Lee teaches forming the first lightly doped sub-amorphous silicon layer (layer 106a) and the second lightly doped sub-amorphous silicon layer (layer 106b) of the instant case. Applicants respectfully disagree. Lee teaches a first a-Si layer 106a, a second a-Si layer 106b, a N+Mixed a-Si layer 106c as the channel layer. Since Lee does not specify the first a-Si layer 106a and the second a-Si layer 106b are doped but specify the a-Si layer 106c is doped, it is reasonable to presume that the a-Si layer 106a and the a-Si layer 106b are undoped. Accordingly, Lee also fails to teach forming the channel layer comprises forming a first lightly doped sub-amorphous silicon layer at a first deposition rate and forming a second lightly doped sub-amorphous silicon layer at a second deposition rate.

For at least the foregoing reasons, Applicants respectfully submit that independent claims 1 and 19 patently define over Wuu in view of Lee, and should be allowed. Since claims 2, 4, 8, 10, 20, 22, 24-25 are dependent claims, which further define the invention recited in claims 1 and 19, respectively, Applicanta respectfully assert that these claims also are in condition for allowance.

Applicants respectfully traverse the rejection of claims 3, 5-7, 21, 13, 26 and 27 under 103(a) as being unpatentable over Wuu in view of Lee and further in view of Yang et

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al. (US Publication 2002/0102781. hereinafter "Yang") because a prima facie case of obviousness has not been established by the Office Action.

The Office asserts that Yang teaches doping the amorphous silicon channel layer of the TFT with phosphine or boroethane and the concentration/ratio of the reactants. In this regard, Applicants respectfully submit that for at least the reasons Yang also fails to teach or suggest forming a first lightly doped sub-amorphous silicon layer at a first deposition rate and forming a second lightly doped sub-amorphous silicon layer, Yang cannot cure the deficiencies of Wuu and Lee. Therefore, independent claims 1 and 19 are patentable over Wuu in view of Lee and Yang. For at the least the same reasons, their dependent claims 3, 5-7, 21, 13, 26 and 27 are also be patentable.

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CONCLUSION

For at least the foregoing reasons, it is believed that all the pending claims of the present application patently define over the prior art and are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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